REMARKS

Claims 1, 2, 4, 6-8, 10 and 12 are presented for examination. Claims 3, 5, 9, and 11 have been cancelled without prejudice. Claims 1, 2, 4, 6-8, 10, and 12 have been amended.

In particular, amended claim 1 further defines the starting material of aqueous chloride solution as containing **iron as a concomitant element**, as described in the specification: "the concomitant elements are iron and/or silver." (Specification, p.6, ll. 26-27). Furthermore, amended claim 1 requires **"40% by volume or more" of tributyl phosphate** ("TBP"), which is supported by p. 6, ll. 13-14, of the Specification. With respect to the stripping step, amended claim 1 further defines the aqueous solution, which now contains **copper at 70 g/L or less and chlorine ion at 50 to 350 g/L**. (Specification, p. 6, ll. 18-19).

Amendments to claims 2, 4, and 6 were made for form.

As for amended claims 7, 8, 10, and 12 as shown above, the specification supports that "the concomitant elements are iron and/or silver." (Specification, p.6, ll. 26-27).

These claim amendments do not present any new matter, and raise no new issues.

The Claimed Invention

Selective extraction of copper from various concomitant elements, especially iron or silver, pose serious challenges in terms achieving high extraction yields of copper. Successful techniques must avoid pitfalls, such as, oxidation of iron and the resulting precipitate of iron hydroxide; solvating extraction which does little in terms of extracting cupric ion; or ferrous ions which make iron extraction unstable. (Specification, pp. 1-3).

Recently, various attempts have tried to separate copper from iron or silver present in a leaching liquor. Due to their chemical properties, however, copper and silver are usually separated by an amalgam process with mercury, and not in an aqueous chloride solution as in the claimed invention. (Specification, pp. 3, 4). As for extracting copper from iron in an aqueous chloride solution, numerous problems abound, such as massive consumption of acid and alkali, and massive energy consumption.

In brief, the amended claims cover a **solvent extraction** process for efficient separation and recovery of **copper** from an **aqueous chloride solution** containing copper**, iron,** and other concomitant elements, such as **silver**. As noted in the specification, TBP affects the extraction yields of both copper and iron; that is, the relative yields of copper and iron are indicated by a Cu/Fe coefficient. (Specification, p. 11, ll. 6-10; Fig. 2, *infra*). In the claimed copper solvent extraction, the first step adjusts the aqueous chloride solution to an oxidation-reduction potential of 0 to 350 mV (based on an Ag/AgCl electrode), then selectively extracts copper from the aqueous chloride solution by mixing the solution with an extractant of organic solvent composed of TBP in an amount of 40% by volume or more. The second step strips copper by mixing the extractant, in which the copper is stripped, with an aqueous solution containing copper at 70 g/L or less and chlorine ion at 50 to 350 g/L.

Claim Rejections Based on Imamura

Claims 1-3 were rejected under 35 U.S.C §102(b) as being anticipated by JP 08-176693 to Imamura, *et al.* (Office Action, p. 4).

Claims 1-6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Imamura, *et al.* (Office Action, p. 6).

Claims 3 and 5 are cancelled. Accordingly, the §102(b) and §103(a) rejections over **Imamura** relate to amended claims 1, 2, 4, and 6. The applicants respectfully traverse this rejection.

Among other things, **Imamura** fails to disclose the claimed copper solvent extraction method because **Imamura** is not directed to a copper/iron extraction method and, therefore, makes absolutely no mention of iron as a concomitant element. Given that the chemical properties of different elements make some concomitant elements better suited for solvent extraction than others, **Imamura** directs its invention to extracting copper from a "chloride solution of copper, nickel, and cobalt," but not iron as a concomitant element. (Imamura, [0002]). In fact, **Imamura** makes no mention of iron as a concomitant element to copper solvent extraction. Copper solvent extraction in the presence of copper and iron poses problems unique to a copper/iron extraction context, such as yield issues and other pitfalls, as discussed above. Without disclosing iron as a concomitant element to copper solvent extraction, **Imamura** wholly fails to anticipate, teach or suggest the claimed invention recited in claim 1.

Furthermore, **Imamura** fails to disclose the claimed aqueous solution in the stripping step. While **Imamura** uses mere "water," the claimed invention's aqueous solution requires copper at 70g/L or less and chlorine ion at 50 to 350 g/L for the stripping step. (Imamura[0021]; claim 1).

Therefore, given that **Imamura** fails to disclose copper solvent extraction from an aqueous chloride solution containing copper and **iron** as concomitant elements, and further fails to disclose the recited oxidation-reduction potential, let alone disclose the claimed aqueous solution used in the stripping step, it is impossible for **Imamura** to meet each and every limitation of the amended claim 1, and all of the claims dependent thereon, claims 2, 4, and 6. Accordingly, in light of the foregoing, the applicants respectfully submit that **Imamaura** fails to anticipate, teach or suggest the claimed

invention recited in claims 1, 2, 4, and 6, and request reconsideration and withdrawal of this rejection.

Claim Rejections Based on Ando

Claims 1-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0144208 to Ando, *et al.* (Office Action, p. 5).

Claims 3, 5, 9, and 11 have been cancelled. Claims 1, 2, 4, 6-8, and 10-12 are pending.

The applicants respectfully traverse this rejection on the ground that **Ando** fails as prior art. **Ando** qualifies as §103(a) prior art based on its §102(e) U.S. filing date. **However, the instant application and the reference, were at the time the invention was made, owned by, or subject to an obligation of assignment to, the same entity, Sumitomo Metal Mining Co., Ltd.**

According to the PTO Assignment records, Sumitomo Metal Mining Co., Ltd. owns **Ando**, (effective February 2, 2004; Reel/Frame 014496/0762) and the instant invention (effective March 3, 2005; Reel/Frame 017446/0356). Furthermore, Sumitomo Metal Mining Co., Ltd. was the applicant of the priority application, JP 2004-123767, filed on April 20, 2004, and the PCT application, WO 2005/103308, filed on March 11, 2005.

In light of the foregoing evidence of Sumitomo Metal Mining Co., Ltd.'s common ownership of **Ando** and the instant application, at the time of the claimed invention, **Ando** fails as §103(c) prior art with respect to the claimed invention recited in claims 1, 2, 4, 6-8, and 1-12.

Accordingly, the applicants respectfully request that this rejection be withdrawn.

Claims 1, and 3-12 are rejected under 35 U.S.C. §102(e) as being anticipated by Ando. (Office Action, p. 2).

Claims 3, 5, 9, and 11 have been cancelled. The applicants respectfully traverse the rejections of claims 1, 4, 6-8, and 10, 12.

The applicants respectfully traverse this rejection on the ground that **Ando** fails as prior art. The inventors' Rule §1.1.32 Declaration, attached herewith unexecuted, establishes that any invention disclosed but not claimed in **Ando** was derived from the inventors of the instant application – Messrs. Takeda, Ando, Kudo, and Imamura, and is thus not the invention "by another" as required by §102(e).

The executed declaration will follow shortly.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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ENCLS: 1.132 Declaration (2 pages)